the deep muscles of the neck, enormous emphysema of the mediastinum, pericardium, and the whole retropleural, peripleural, and retroperitoneal tissue. At the right hilus there was found a loosened ligature, which had been applied to a divided bronchus, and this bronchus had retracted inward into the mediastinal space. Opening of the chest in the pneumatic cabinet, with resulting removal of the air, might have overcome the indirect effect of the mediastinal emphysema on the circulation and respiration. An almost analagous case is reported by Friederich, following removal of the left lung in a woman, but in this case the autopsy did not reveal the source of the escaping air. A septic pleurisy also developed in this case. In those animals in which the amputation of the lung had been done and the ligature had been effective in maintaining the closure of the bronchus, and the asepsis was good, the operation was quickly and effectively carried out, and no symptoms of inflammation developed. The animals lived, were active, had good appetites, and increased in weight. This shows that the remaining organs adapt themselves to the altered relations rendered necessary by the vacant space left by the removal of the lung. This is brought about by a change in position of the soft tissues and a sinking in of the ribs on the side operated on, so that the space vacated by the removed lung becomes obliterated. This is well shown by the illustrations of specimens from dogs operated on and later killed. Absolute healing may thus follow the removal of one lung. The defect becomes filled, by the displacement of the heart and mediastinum toward the affected side, by vicarious emphysema of the remaining lung, by ascent of the diaphragm, and by flattening of the ribs on the affected side.

THERAPEUTICS.

UNDER THE CHARGE OF

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Vaccine Therapy and Therapeutic Immunization.—WRIGHT (*Practitioner*, 1908, vi, 565) reviews the conclusions which have been established by his own results in vaccine therapy and auto-immunization and by those of his fellow workers. These conclusions are the following: (1) Vaccine therapy is applicable not only to localized infections, but also to general septicemic diseases. (2) Spontaneous auto-inoculations occur not only in general septicemic diseases, but also in cases with localized diseases in which the focus of infection has attained to a certain development. (3) Auto-inoculation can, in the case of localized disease, be artificially induced by massage, by active and passive movements, and by active and passive hyperemia. (4) Such artificially induced auto-inoculations can be turned to useful account in diagnosis. (5) The success of certain empirical methods of treatment, notably the Bier method of passive congestion, is probably largely dependent upon the fact that it induces adequate and not excessive auto-inoculations. Wright further considers the possibility of achieving the desired improvement apart from the determination of the opsonic index. There is associated with this point the question as to whether the technique used for the determination of the opsonic index gives accurate and useful results. He is of the opinion that injections of bacterial vaccines should not be undertaken entirely in the dark. He believes that both vaccines and the human organism are too variable and inconstant factors to allow even an approximation to the fixing of a definite dose applicable to all conditions. In dealing with vaccines, one can never leave out of consideration the difference in different strains of the same organism. Some minute difference in the mode of preparation, or perhaps some change occurring spontaneously during preservation, might affect the strength of the vaccine products. But a greater factor exists in the different effect produced by the same dose of vaccine in the healthy individual as compared with that in the infected patients, and in the cases of severe infection as compared with the result in those of light infection. Thus, when it is difficult to predict the result of one inoculation, it is much more difficult to predict the result of a series of inoculations. In a few individual cases a proper dose may be arrived at which will give uniform results. This is true in strictly isolated local infections, such as a furuncle. When one adheres to a given dose, there is a possibility of two errors. The doses might be too small, and have little or no effect, or, on the other hand, they might excite a marked negative phase and so do much harm. In taking up the suggestion that the clinical symptoms of the patient may furnish a guide, he considers four classes of cases. There are cases of localized infections which the clinical observer can see for himself and learn of every change which occurs in the focus of infection. The most typical examples of these are furunculosis, sycosis, and suppurating acne which are usually due to staphylococci. In the same class there are the streptococcic infections of the skin and subcutaneous tissue, which take the form of impetigo, serous furuncles, erysipelas, and lymphangitis. He also includes in this class infections of any organ in which by examination of secretions or excretions one may obtain an idea of the inflammatory process.

With the subjective symptoms as a guide in such cases, and with such objective signs as we can elicit, we may judge whether the dose has been moderate, small, or excessive. An improvement for a brief period followed by an early relapse would indicate too small a dose. If the patient grew immediately worse, we would assume an excessive dose. He points out some errors, however, which may result if too great dependence is put on clinical symptoms: (*a*) The clinical symptoms may convey quite an erroneous idea of the real conditions of the local infection. This is true in mixed infections, in which incidentally the secondary infection may increase in extent and obscure the clinical picture. (*b*) The clinical symptoms of the local infection may give an entirely wrong idea of the general infection. (*c*) The anti-bacterial power of the blood of a patient in good, general condition cannot be assumed to be at all uniform.

There are cases of strictly localized infection in which the process is more or less chronic, in which the information indicating an advance in the process as given by clinical signs and symptoms is often too late. This class comprises cases of tuberculous adenitis or arthritis, phthisis, and lupus. In acute febrile conditions the general rule, that with the subsidence of the temperature the protective substances increase, has many exceptions. Finally, there is the class of cases in which all local and general symptoms are in abeyance. This class includes cases of the other groups which are apparently cured. Wright claims that the important question relative to the establishment of immunity can be answered in all cases only by a determination of the opsonic index. He believes that the technique for the determination of the opsonic index furnishes accurate and useful information with respect to the patient's progress. He explains the inconsistent results of other observers either by faulty technique, in the necessary mechanical manipulation, or by lack of required patience.

Wright mentions a number of therapeutic measures which bring the antibacterial agencies of the circulating blood into effective operation upon the microbes at the site of infection.

Among the measures are active and passive hyperemia. He believes their beneficial effects are produced by auto-inoculation. Active hyperemia may be induced by hot fomentations, rubefacients, or heat in any form. Passive hyperemia is usually obtained by the well-known method of Bier. Wright says that diminished coagulability of the blood is associated with increased transudation of lymph, while increased coagulability leads to a diminished transudation of lymph. He believes also that calcium salts, especially the lactate, have the power to increase the coagulability of the blood, and that citric acid diminishes it. Thus, he thinks it possible to hasten the absorption of a transudate by giving calcium lactate or to secure an effusion of serum by the use of citric acid. He points out the advantage of determining a flow of lymph rich in anti-bacterial power to the infected area. For this purpose he advises the use of wet dressings of one and a half to four parts of salt and one part of citrate of sodium dissolved in 100 c.c. of boiling water. The surrounding skin should be protected by vaseline to prevent excoriation. He considers that the various surgical procedures of evacuating abscesses are all means to an end, the means of bringing the antibacterial agencies of the blood into effective operation. Therefore, he believes in early incision, before the formation of pus.

A Specific Ferment Therapy for Diabetes.—Zuelzer (*Ztschr. f. exp. Path. u. Therap.*, 1908, v, 306) showed in a previous paper that in experimental animals injection of a pancreatic extract prevents the production of adrenalin diabetes. In this communication Zuelzer gives the results obtained by the injection of the extract in experimental diabetes due to extirpation of the pancreas and in diabetes in man. The extract was prepared from pancreatic glands taken from animals at the height of digestion. The animal experiments were few in number, but the results obtained were quite constant, that is, diminution of the quantity of sugar excreted in the days following the injection. The experiments on animals were interrupted by an opportunity to try the extract in man, and had not been completed at the time of publication. The first human patient was a man, aged fifty years, in whom diabetes had been discovered three years previously. On strict diet the sugar amounted to 6 per cent. Following amputation of the left leg for gangrene, acidosis with coma developed and the patient's condition was desperate. Accordingly, he was given a subcutaneous injection of 3 grams of pancreatic extract dissolved in 8 c.c. of water. On the following day a second injection containing 5 grams was given. The urine was lost during the days subsequent to the injections, but there occurred a marked improvement in the general condition of the patient, especially in his mental condition. Seventeen days after the first injection was given the patient died, before a fresh supply of extract could be obtained. The results demonstrated, however, the apparent harmlessness of the extract. The second patient was a man, aged twenty-seven years, admitted to Prof. Kraus' clinic six months after the diagnosis of diabetes had first been made. The amount of urine varied between 1400 and 3000 c.c., sugar between 2 per cent. and 6.4 per cent., and acetone and diacetic acid were constantly present. Following the first small injection (1 c.c. intravenously) the sugar fell to 1.3 per cent. in 1400 c.c. of urine, acetone, and diacetic acid being present. The second injection was larger, containing 2 grams of extract. Acetone and diacetic acid completely disappeared from the urine on the next day, and the urine contained neither of these substances for three days; glucose gradually diminished until only a trace was found on the third day after the second injection. Subsequently the sugar gradually increased in quantity and diacetic acid and acetone reappeared. Further observations in this case were impossible, as the patient left the hospital. In six other diabetics between six and sixty-five years of age, injections of pancreatic extract were tried, and in all the results were uniform and constant (except in a few instances in which inactive extract was demonstrated), the glucose always being diminished and usually entirely absent from the urine in two to three days after the injection, the same also holding good with acetone and diacetic acid. On several occasions the injections were followed by chill, rise in temperature, and, less often, by a stomatitis, the symptoms passing off in one to two days. In all the experiments no change was made in the diet of the patients after the injections. In the future Zuelzor proposes giving smaller doses at more frequent intervals, hoping thus to avoid the unpleasant consequences. His conclusion is that it is possible to cause sugar, diacetic acid, and acetone to disappear from the urine of diabetics by the injection of pancreatic extracts. To what extent this fact may be utilized therapeutically remains to be determined.

The Treatment of Diphtheria, Scarlet Fever, and Tonsillitis by Pyocyanase.—SAUER (*Deut. med. Woch.*, 1908, xxxvi, 1541) has used pyocyanase as a spray in 39 cases of various throat infections. These cases included 14 cases of diphtheria, 8 of the sore throat of scarlet fever, and 17 of severe tonsillitis, 3 of which were cases of Vincent's angina. Every case was diagnosticated by a bacteriological examination. Laboratory experiments showed that the preparation had a solvent action upon diphtheritic membrane. The growth of diphtheria bacilli in cultures was in part inhibited, but there was no effect in neutralizing the diphtheria toxin. An ordinary throat spray was used and the throat was sprayed with the solution three to four times a day. For a half hour